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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,241	01/08/2004	Arne W. Ballantine	END9-2000-0100US2	7960

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EXAMINER	
TSAI, H JEY	

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/753,241	BALLANTINE ET AL.
	Examiner	Art Unit
	H.Jey Tsai	2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,10-12,16,20,23,24,47 and 49-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5,10-12,51-62 and 67-69* is/are allowed.

6)☒ Claim(s) *1,4,16,20,23,24,47,49,50,63-66 and 70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/8/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restriction

Applicant's election with traverse of claims 1, 4-5. 10-12, 16, 20, 23-24, 49-66, 47, and 67-69 in the reply filed on Oct. 11, 2005 is acknowledged. The traversal is on the ground(s) that search and examination of different species does not cause serious burden. This is not found persuasive because anodization process and beam deposition process are mutually exclusive species.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 47, 63, 64-66, 70 are rejected under 35 U.S.C. § 102(b) as being anticipated by Mochizuki 4,533,935.

Mochizuki teaches method for increasing an electrical resistance of a resistor, comprising the steps of:

providing a semiconductor structure that includes the resistor 26, fig. 5c, col. 3, l;ines 38-49,

oxidizing a fraction F of a surface layer of the resistor with oxygen particles (dry oxygen) or NH_3 or nitrogen, resulting in the increasing of the electrical resistance of the resistor, with fraction of F <1 less than conductive layer 18, col. 4, lines 50-51, col. 5, lines 1-68, col. 6, lines 1-36,

wherein a dimension of the portion of the resistor does not exceed about 1 micron, col. 5, lines 1-13.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 16, 20, 23, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Basseches et al. 3,148,129 in view of Poisel 4,485,370.

The reference(s) teach the features :

Basseches et al. discloses a method for increasing an electrical resistance of a resistor:

forming an anodization electrical circuit which includes: a DC power supply 7, 8, 9, 10, an electrolytic solution 5 comprising oxygen (water, nitric, acetic. Citric, oxalic acid, nitiric acid HNO_3 containing NO_3 gas particles), the resistor 3 partially immersed in the electrolytic solution 5, and a cathode 6 partially immersed in the electrolytic solution 5, wherein the resistor 3 (with an resistance layer, col. 2, lines 10-11) is electrically coupled to a positive terminal of the DC power supply such that the resistor 3 serves as an anode, and wherein the cathode is electrically coupled to a negative terminal of the DC power supply, fig. 2 and col. 2, lines 10-71,

activating (initiated by closing the switch 8) the DC power supply such that the DC power supply generates a voltage output, wherein the voltage output causes an electrolytic reaction in the electrolytic solution near the resistor 3, wherein the electrolytic reaction generates oxygen ions from the oxygen in the electrolytic solution, and wherein the oxygen particles include the oxygen ions; and oxidizing the fraction of the surface layer with the oxygen ions to increase the resistance of resistor 3, col. 2, lines 37-54,

testing (monitoring with monitor means 10) the resistor 3 during the oxidizing step to determine the desired resistance has been attained, col. 2, lines 39-55,

The difference between the reference(s) and the claims are as follows: Basseches et al. teaches increasing an electrical resistance of a resistor on a substrate by using anodization process but does not teaches the resistor can be formed in a semiconductor structure. However, Poisel teaches at col. 3, lines 40-67, forming a resistor in an integrated circuit (a semiconductor structure) by using anodization and nitridation process to increase the resistance of a resistor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Basseches et al. process by forming a resistor in the semiconductor structure (integrated circuit) as suggested by Pisel because resistor can be as a part of integrated circuit such RC circuits.

Claims 24, 49-50, 66 are rejected under 35 U.S.C 103 as being unpatentable over as applied to claims 1, 16, 20, 23, 47, 63 above, and further in view of Mochizuki et al. 4,533,935 and Skill level of an ordinary person in the art.

The difference between the references applied above and the instant claim(s) is: Basseches et al. teaches increasing the resistance in a portion of a resistor but does not teach specific dimension of the resistor. However, Mochizuki teaches at col. 5, lines 1-13, forming a resistor portion of less than 1 micron and the specific dimension of resistor as claimed are taken to be obvious since these are variables of art recognized importance which are subject to routine experimentation and optimization and discovery of an optimum value for a known process is obvious. In re Aller, 105 USPQ 233 (CCPA 1955). And, even if applicants' modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art, In Re Sola 25 USPQ 433.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings with a resistor less than 1 micron because the dimension of a resistor determine the resistance of a resistor and such resistance value is taken to be obvious since these are variables of art recognized importance which are subject to routine experimentation and optimization and discovery of an optimum value for a known process is obvious.

Allowable Subject Matter

Claims 5, 10-1251-62, 67-69 are allowable over the prior art of record for the reasons of the oxidizing step includes: placing the semiconductor structure in a chamber; including a gas within chamber, wherein the gas includes the oxygen

particles at an oxygen concentration, and wherein the oxygen particles include oxygen-comprising molecules; heating the fraction of the surface layer at a heating temperature, wherein a combination of an oxygen concentration and the heating temperature is sufficient to oxidize the fraction of the surface layer; and oxidizing the fraction of the surface layer with the oxygen-comprising molecules, and directing a beam into the fraction of the surface layer such that the beam causes the heating of the fraction of the surface layer, and wherein the beam is selected from the group consisting a beam of radiation and a beam of particles.

Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the customer service whose telephone number is (703) 308-4357.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873.

The fax phone number for this Group is 571-273-8300.

hjt

11/5/2005

H. Jey Tsai
Primary Examiner
Patent Examining Group 2800